

CLAIMS

1. A method of automatically feeding and transporting food products from an in-feed device to a combination weigher, which automatically selects from a number of portions of known weight the best combination from which to make a batch of fixed weight with minimum give-away. Wherein the main steps of the preferred in-feeding method comprises the feeding of the raw material from bulk by means of a tub tipper (3) and a conveyor belt (4) onto a infeed and dispersion machine (6 or 51), consisting of two product dispersers (7, 11) and revolving scales (10), and thereafter onto the moveable transporting device (14) or (53), whereas the method is characterised by feeding the raw material evenly and accurately onto at least one and up to an unlimited number (n) of independent, endless movable conveyors (14a, 14b, ..., 14n), which are moveable in both directions along their longitudinal plane independently of each other, and then, when the conveyor belt(s) is running, transporting the raw material to a combination weigher (16), consisting of a corresponding number of rows (17a, 17, ..., 17n) of pool hoppers (17a.1, ..., 17.a.m, ..., 17n.1, ..., 17n.m), where each row can have an unlimited number of pool hoppers (m) and a corresponding number of rows (18a, 18b, ..., 18n) of weighing hoppers (18a.1, ...18a.m,...18n.1,...,18n.m) as befits the number of movable conveyors (14a, 14b, ..., 14n), with one particular movable conveyor feeding one particular row of pool hoppers and weighing hoppers.
2. A method according to Claim 1, characterised by the endless movable conveyors (14a, 14b, ..., 14n) are covered evenly and accurately with an almost fully continuous, known amount of product per unit length of the conveyor.
3. A method according to Claims 1 and 2, characterised by the in-feed to the endless moveable conveyors (14a, 14b...14n) providing the almost continuous, known amount of product per unit length is obtained by an infeed and dispersion machine (6) which has the same number of pairs of dispersers (8a, 8b...8n) and (12a, 12b, 12n) as well as scales (10a, 10b...10n) as the number of movable conveyors (14a, 14b...14n) dictates, where one particular disperser lane corresponds to one particular movable conveyor.

4. A method according to Claims 1-3, c h a r a c t e r i s e d by, when a particular pool hopper (e.g. 17a.3) in a particular row (a) is empty, the corresponding endless conveyor (14a), which is covered with a known amount of product per unit length, is moved until its out-feed end is directly above the respective empty pool hopper (17a.3), and the conveyor is then started and run for a certain amount of time so that the appropriate amount of product is placed in the pool hopper.
5. A method according to Claims 1-4, c h a r a c t e r i s e d by the in-feed to the endless movable conveyors (14a, 14b, ..., 14n) is started both when the conveyors are running to feed an empty pool hopper (17a.1, ...17a.m,...17n.1,...,17n.k), and also when they are moved as a whole away from the in-feed device (6) towards the combination weigher (16); product is, however, not fed onto the movable conveyors when they are moved as a whole in the opposite direction.
6. A method according to Claim 5, c h a r a c t e r i s e d by the velocity of the movement of the movable conveyors (14a, 14b...14n) is the same as the velocity of the conveyor belt when product is being released from them.
7. A method according to Claims 1-6, c h a r a c t e r i s e d by the product is mainly fresh and unfrozen food products of various kinds, which are fragile and have a tendency to stick to the conveyor underlay, especially sticky products such as fresh fish and meat products, fruit and vegetable products and other unfrozen food products fitting into this category.
8. A method according to Claims 1-7, c h a r a c t e r i s e d by the endless movable conveyors (14a, 14b, ..., 14n) can be moved a sufficient distance from the in-feed equipment towards the combination weigher (16), in order to release excess products into the reject tub (26) which can be placed at the end of the combination weigher (16) which is further away from the in-feed device.

9. A method according to Claim 1, characterised by feeding the raw material evenly and accurately onto the endless and moveable conveyor (53), which then feeds the raw material to any of the endless and moveable conveyors (54-58) by means of its transversal arrangement with respect to the infeed and dispersion machine (51) as well as the conveyors (54-58) and also being moveable in both directions along its longitudinal plane and further being able to run its conveyor belt in both directions.
10. A method according to Claim 1 and 9, characterised by the independent, endless and back and forth moveable conveyors (54-58) feeding the raw material evenly and accurately on to a combination weigher, consisting of at least the same number of rows of pool hoppers (59-68) and weighing hoppers (69-78) as there are of moveable conveyors (54-58), with one particular movable conveyor feeding one particular row of pool hoppers and weighing hoppers.